

WHAT IS CLAIMED IS:

1. A high-frequency circuit formed on a surface of a dielectric substrate, comprising:

5 a signal strip formed on a first face of the dielectric substrate for transmitting a signal therethrough;

a pair of ground strips formed on the first face astride the signal strip, with an interspace on each side of the signal strip;

10 a ground conductor layer formed on a second face of the dielectric substrate, the second face being opposite to the first face; and

a plurality of through-vias formed in the dielectric substrate astride the signal strip for electrically connecting
15 the pair of ground strips to the ground conductor layer,

wherein, among the plurality of through-vias, first and second through-vias which are a pair of opposing through-vias located closest to a terminating end of the signal strip are disposed apart from each other by a distance smaller than a distance between
20 any other pair of opposing through-vias.

2. The high-frequency circuit according to claim 1, wherein,

the distance between the first and second through-vias
25 is less than $1/2$ of an effective wavelength corresponding to a

designed frequency, and

the distance between any other pair of opposing through-vias is equal to or less than $1/2$ of the effective wavelength corresponding to the designed frequency.

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3. The high-frequency circuit according to claim 2, wherein,

the terminating end of the signal strip is near an end of the dielectric substrate, and

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the first and second through-vias are disposed so that a distance between portions thereof that lie closest to the end of the dielectric substrate is less than $1/2$ of the effective wavelength corresponding to the designed frequency.

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4. The high-frequency circuit according to claim 1, wherein the first and second through-vias are each disposed so as to be away from an end of the ground conductor layer by a distance which is less than $1/4$ of the effective wavelength corresponding to the designed frequency.

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5. The high-frequency circuit according to claim 1, wherein the signal strip is narrower at the terminating end than at any other portion.

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6. The high-frequency circuit according to claim 1,

wherein an interspace between the signal strip and each ground strip is narrower at the terminating end of the signal strip than at any other portion.

5 7. The high-frequency circuit according to claim 1, wherein the dielectric substrate is a resin substrate having a low dielectric constant.

10 8. The high-frequency circuit according to claim 1, wherein portions of the ground conductor layer interposed between the first and the second through-via and opposing the signal strip are eliminated.

15 9. The high-frequency circuit according to claim 1, wherein, within a region extending nearer to an end of the substrate than to a region interposed between the first and second through-vias, portions of the ground conductor layer opposing the signal strip are eliminated.

20 10. The high-frequency circuit according to claim 1, wherein portions of the ground conductor layer opposing the signal strip are removed.

25 11. A high-frequency package into which an integrated circuit is packaged, comprising:

a high-frequency element composed of the integrated circuit for processing a high-frequency signal; and

a dielectric substrate on which the high-frequency element is mounted,

5 wherein the dielectric substrate includes:

a signal strip formed on a first face of the dielectric substrate for transmitting a signal therethrough;

a pair of ground strips formed on the first face astride the signal strip, with an interspace on each side of the
10 signal strip;

a ground conductor layer formed on a second face of the dielectric substrate, the second face being opposite to the first face; and

a plurality of through-vias formed in the dielectric
15 substrate astride the signal strip for electrically connecting the pair of ground strips to the ground conductor layer,

wherein, among the plurality of through-vias, first and second through-vias which are a pair of opposing through-vias located closest to a terminating end of the signal strip are disposed
20 apart from each other by a distance smaller than a distance between any other pair of opposing through-vias.

12. The high-frequency package according to claim 11,
wherein,

25 the distance between the first and second through-vias

is less than $1/2$ of an effective wavelength corresponding to a designed frequency, and

the distance between any other pair of opposing through-vias is equal to or less than $1/2$ of the effective wavelength
5 corresponding to the designed frequency.

13. The high-frequency package according to claim 12,
wherein,

the terminating end of the signal strip is near an end
10 of the dielectric substrate, and

the first and second through-vias are disposed so that
a distance between portions thereof that lie closest to the end
of the dielectric substrate is less than $1/2$ of the effective
wavelength corresponding to the designed frequency.

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14. The high-frequency package according to claim 11,
further comprising a mounting-side dielectric substrate on which
the dielectric substrate is mounted,

wherein the mounting-side dielectric substrate
20 includes:

a mounting-side signal strip formed on a first
mounting face of the mounting-side dielectric substrate so as to
be connected to the signal strip for transmitting the signal
therethrough;

25 a pair of mounting-side ground strips formed on the

first mounting face astride the mounting-side signal strip, with an interspace on each side of the mounting-side signal strip;

a mounting-side ground conductor layer formed on a second mounting face of the mounting-side dielectric substrate, the second mounting face being opposite to the first mounting face; and

a plurality of mounting-side through-vias formed in the mounting-side dielectric substrate astride the mounting-side signal strip for electrically connecting the pair of mounting-side ground strips to the mounting-side ground conductor layer,

wherein, among the plurality of mounting-side through-vias, first and second mounting-side through-vias which are a pair of opposing mounting-side through-vias located closest to a terminating end of the mounting-side signal strip are disposed apart from each other by a distance smaller than a distance between any other pair of opposing mounting-side through-vias.

15. The high-frequency package according to claim 14, wherein,

the distance between the first and second mounting-side through-vias is less than $1/2$ of an effective wavelength corresponding to a designed frequency, and

the distance between any other pair of opposing mounting-side through-vias is equal to or less than $1/2$ of the effective wavelength corresponding to the designed frequency.

16. The high-frequency package according to claim 15,
wherein,

the terminating end of the mounting-side signal strip
5 is near an end of the mounting-side dielectric substrate, and
the first and second mounting-side through-vias are
disposed so that a distance between portions thereof that lie
closest to the end of the mounting-side dielectric substrate is
less than $1/2$ of the effective wavelength corresponding to the
10 designed frequency.

17. The high-frequency package according to claim 11,
further comprising a cover for protecting the high-frequency
element.

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18. A high-frequency circuit formed on a surface of a
dielectric substrate on which a high-frequency package is to be
surface-mounted, the high-frequency package having a coplanar
waveguide formed on a lower face thereof, comprising:

20 a signal strip formed on a first face of the dielectric
substrate so as to be connected to the high-frequency package for
transmitting a signal therethrough;

a pair of ground strips formed on the first face astride
the signal strip, with an interspace on each side of the signal
25 strip;

a ground conductor layer formed on a second face of the dielectric substrate, the second face being opposite to the first face; and

a plurality of through-vias formed in the dielectric substrate astride the signal strip for electrically connecting
5 the pair of ground strips to the ground conductor layer,

wherein, among the plurality of through-vias, first and second through-vias which are a pair of opposing through-vias located closest to a terminating end of the signal strip are disposed
10 apart from each other by a distance smaller than a distance between any other pair of opposing through-vias.

19. The high-frequency circuit according to claim 18,
wherein,

15 the distance between the first and second through-vias is less than $1/2$ of an effective wavelength corresponding to a designed frequency, and

the distance between any other pair of opposing through-vias is equal to or less than $1/2$ of the effective wavelength
20 corresponding to the designed frequency.

20. The high-frequency circuit according to claim 19,
wherein,

the terminating end of the signal strip is near an end
25 of the dielectric substrate, and

the first and second through-vias are disposed so that a distance between portions thereof that lie closest to the end of the dielectric substrate is less than $1/2$ of the effective wavelength corresponding to the designed frequency.